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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/788,148	02/16/2001	Barry Wendt	S30.12-0002	4295

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EXAMINER	
SETH, MANAV	

ART UNIT	PAPER NUMBER
2624	

DATE MAILED: 08/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/788,148	WENDT ET AL.	
	Examiner	Art Unit	
	Manav Seth	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 June 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,65-68 and 85-87* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,65-68 and 85-87* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to the Amendment

1. Amendment filed on June 12, 2006 has been entered in full.

2. Applicant's amendments and arguments to the amended claims have been fully considered but are moot in view of the new ground(s) of rejection(s).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 65 and 67 are rejected under 35 U.S.C. 102(b) as being anticipated by Bolle et al., U.S. Patent No. 5,883,971.

Bolle in col. 1, lines 63-68 through col. 2, lines 1-5, discloses the reference by Ratha et al., "Adaptive flow orientation based feature extraction in fingerprint images", Pattern Recognition, vol. 28, no 11, pp. 1657-1672, November 1995, and further discloses that "this reference is incorporated herein by reference in its entirety". Therefore, examiner considers the combination of both

references Ratha and Bolle as one reference but provides citations in both references for rejection purposes.

Claim 65 recites **"A computer implemented method for evaluating image quality, the method comprising: obtaining a raw scan image; selecting at least one image portion from the raw scan image"**. Bolle discloses obtaining a raw scan image (See Ratha, Figure 6, 1st step, Obtaining Gray Scale Image) and further discloses selecting **at least one image portion from the raw scan image** (Ratha, page 12, 2nd para., Under topic "Proposed Algorithm", "To accurately determine the local orientation field, the input image is divided into equal-sized blocks (windows) of 16 x 16 pixels. Each block is processed independently").

Bolle further discloses generating a collection of slope-oriented data that corresponds to said at least one image portion of the raw scan image; generating a slope representation based on at least a portion of the raw scan image; and utilizing the slope representation to determine a quality characteristic of the raw scan image (Ratha, page 13, figure 6 –"compute block direction & smooth, last paragraph – "the orientation field is used to compute the optimal ridge direction in each 16 x 16 window or block; page 14, compute gradient, compute direction, compute the variance of gray levels in a direction orthogonal to the orientations field in each block; page 16, 2nd paragraph, the use of variance computed to decide the quality of image, image quality classification: good, medium, poor). See (Bolle, col. 3, lines 59-65).

In 1st paragraph of page 9 of the amendment filed June 12, 2006, applicant argued "Ratha discloses only one image quality classification of which contrast is a consideration. Ratha does not disclose an additional classification based on a brightness level that is in addition to a quality characteristic". Bolle discloses an additional classification based on the brightness.

Claim 65 further recites "an additional classification based on the brightness level within at least a portion of the raw scan of the image" (See Bolle, col. 3, lines 66-68 through col. 4, lines 1-3, classification of image blocks into smudged block or non-smudged block based on the brightness level; figures 8A and 8B).

Regarding claim 67, Bolle discloses preprocessing the at least one image portion to generate a monochrome image (Ratha, section 3.1).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 68,1 and 85-87 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bolle et al., U.S. Patent No. 5,883,971, further in view Davis, U.S. Patent No. 5,420,937.

Regarding claim 68, Bolle discloses generating said collection of slope oriented data comprises dividing the monochrome image into a plurality of pixel grids and performing a contour trace through said plurality of pixel grids and recording a set of corresponding data and utilizing said set of corresponding data to calculate a slope value for each pixel grid; and recording said slope value in the collection of slope oriented data (Ratha, Section 3.1, page 12-14). Bolle discloses the

computing of the slope oriented data but does not expressly disclose generating a slope table. However, Davis discloses creating a minutia table including slope (col. 8, lines 50-65; col. 11, lines 64-68 through col. 12, lines 1-5). Therefore, it would have been obvious for one of ordinary skill in the art at the time of invention was made to combine the teachings of Bolle and Davis because they are from the same field of endeavor of fingerprint image processing and Davis provides a well-known methodology routinely implemented in the art for representing statistical information, which can be used in subsequent stages for further image processing.

Also, Davis discloses generating a monochrome image and further discloses diving the monochrome image into a plurality of pixel grids (figure 3, col. 16, lines 66-68 through col. 17, lines 1-15; col. 3, lines 55-68; col. 6, lines 38-55). Davis further discloses "performing a contour trace through said plurality of pixel grids and recording a set of corresponding data in a raw slope data table; utilizing said set of corresponding data to calculate a slope value for each pixel grid; and recording said slope in the collection of slope oriented-data" in (Figures 3, 4, 8, 9 and 10; col. 17, lines 1-15, where bordering is contour tracing; col. 3, lines 55-68; col. 4, lines 58-38 through col. 5, lines 1-12; col. 6 lines 30-68).

Regarding claim 1, Bolle discloses preprocessing at least a portion of the at least one image portion of the raw scan image to obtain a monochrome image; and creating a wire frame image based on the monochrome image (Ratha, figure 6, thinning). Generating a wire frame image from a binary black and white image is nothing but obtaining a thinning or skeletonized image, which is very well known in the art of image processing and this is further also disclosed by Davis in the background of the invention (col. 1, lines 54-68 through col. 2, lines 1-3).

Regarding claim 85, as discussed in the rejection of claim 65 and 67-68, Bolle discloses "obtaining a raw scan of an image; preprocessing the raw scan to obtain a monochrome image; generating a collection of slope-oriented information based on the monochrome image; dividing the monochrome image into an array of pixel grids". Bolle as discussed before discloses a block is nothing but a group of pixels (col. 3, lines 10-30). Bolle further discloses "Images are judged to be of poor quality if the quality measure is below a quality threshold and are judged to be of good quality if the quality measure is above the quality threshold" (col. 3, lines 37-41) and Bolle further discloses that such a quality measure is a function of the image area (col.3, lines 28-30) where the image area is apparently defined by the number (count) of pixels. Bolle further provides the support by disclosing that the quality of the image may be determined "by determining whether there are a large number of "smudged" blocks in the images, i.e., there are a relatively large number of blocks whose contrast is very small" (col. 3, lines 40-46) where the block is nothing but a group of pixels. The above disclosure by Bolle conforms to the limitations "executing a count of pixels within at least one pixel grid of the array of pixel grids; comparing the count of the pixels in the at least one pixel grid to a reference; and determining a quantified classification as a relation of the count of the pixels to the reference".

Regarding claim 86, Bolle discloses wherein the reference comprises a threshold pixel count since quality measure is function of area itself (col. 3, lines 37-41; col. 8, lines50-68 through col. 9, lines 1-20).

Regarding claim 87, claim 87 recites "wherein the reference can be tuned". The selection of a threshold being merely a design choice and is very well known in the art of image processing and routinely used in the art and is so done to fulfill the system sensitivity requirement.

7. Claim 66 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bolle et al., U.S. Patent No. 5,883,971, further in view Davis, U.S. Patent No. 5,420,937 and further in view of Gagne et al., U.S. Patent No. 5,363,453.

Claim 66 recites "The method of claim 63, further comprising at least temporarily terminating subsequent processing if the quality classification does not meet a predetermined reference threshold". Bolle does provide the process of quality classification but do not expressly teach at least temporarily terminating subsequent processing if the quality classification does not meet a predetermined reference threshold. Davis discloses "When an aberration test fails, the next test in the sequence proceeds" which clearly provides the teachings how a system can be programmed to perform quality check and thus a program can be programmed, as well known, according to user's choice of operations to be performed. Davis does not specifically teach the conditions as recited in claim 66 but examiner asserts that there are very well known security identification systems that are available which rather than performing several tests would temporarily terminate subsequent processing if the quality classification does not meet a predetermined reference threshold and would indicate "invalid" and such systems including such a feature would further provide more sensitivity towards invalid data scanned. However examiner cites Gagne to further provide the support for above arguments. Gagne, same as Bolle and Davis, is directed to fingerprint analysis for identification purposes. Gagne clearly teaches "to determine whether or not a fingerprint sample is approved, a "confidence level" has to be achieved. This confidence level starts at

zero.....the actual confidence level that must be achieved in order for a fingerprint to be "approved" is again determined by the specific application. One end-user might want a higher confidence level than another end-user. After all element have been compared, and the confidence level is determined, a flag is set to indicate whether of not the sample has "passed" the confirmation process" (col. 15, lines 30) and further teaches that this confirmation can be done in ten steps or can be done in 2 steps and therefore examiner here asserts that it clearly is a user's selection to select a number of steps for confirmation and therefore it would have been obvious for one of ordinary skill in the art at the time of invention was made to combine the teachings of Bolle, Davis and Gagne to temporarily terminating subsequent processing if the quality classification does not meet a predetermined reference threshold because it would provide more sensitivity towards invalid data scanned and as it would merely be a matter of user's selection to provide better sensitive system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Manav Seth whose telephone number is (571) 272-7456. The examiner can normally be reached on Monday to Friday from 8:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta, can be reached on (571) 272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Manav Seth
Art Unit 2624
August 9, 2006